INTERNATIONAL JOURNAL OF

CHEMICAL KINETICS

Contents, Volume 23, 1991

No. 1, January 1991

Thermal Decomposition of Chlorofluoromethyl Peroxynitrates
D. Köppenkastrop and F. Zabel **1**

Kinetics of the Esterification of Palmitic Acid with Isobutyl Alcohol
S. Goto, T. Tagawa, and A. Yusoff **17**

Kinetics and Mechanism of Oxidation of Indigo Carmine by Hypohalites
Puttaswamy, D. S. Mahadevappa, and N. M. M. Gowda **27**

Rate Constant and Products of the BrO + BrO Reaction at 298 K
I. T. Lançar, G. Laverdet, G. Le Bras, and G. Poulet **37**

On the Mechanism of C_2F_5I Photolysis in the Presence of Trifluoroacetic Acid
S. I. Lane, E. V. Oexler, and E. H. Staricco **47**

Chemical Effects of Radical Vibrational Energy Content on the Abstraction Reaction: $CF_3 + Br_2 \rightarrow CF_3Br + Br$
M. A. Young and G. C. Pimentel **57**

Formation of Ring-Retaining Products from the OH Radical-Initiated Reactions of *o*-, *m*-, and *p*-Xylene
R. Atkinson, S. M. Aschmann, and J. Arey **77**

Propagating Reaction Front in 'Frozen' Phase
L. Szirovicza, I. Nagypal, and I. Bárdi **99**

Erratum **103**

No. 2, February 1991

Kinetics of Electron Transfer Reations of Manganese (III) Complexes of *trans*-Cyclohexane-1,2-diamine, -NNN'N'- tetraacetic Acid and 2,2'-Bipyridyl with Ascorbic Acid in Aqueous Acid Media
S. Gangopadhyay, S. K. Saha, M. Ali, and P. Banerjee **105**

The Oxidation of 3,3'-Dimethoxy Benzidine with Potassium Bromate in Acidic Solutions
S. B. Jonnalagadda, N. M. Munkombwe, P. Hensman, and T. Mushinga **113**

Kinetics and Mechanism of Chloramine-T Oxidation of Cinnamaldehyde in Two Acid Media
C. K. Mythily, K. S. Rangappa, and N. M. Made Gowda **127**

Kinetic Study of Some Reactions Related to the Mn(II)-Catalyzed Bromate-Saccharide Oscillating Reactions
C.-C. Ou and J.-J. Jwo **137**

Kinetics of CN Reactions with N_2O and CO_2
N.S. Wang, D.L. Yang, M.C. Lin, and C.F. Melius **151**

Kinetics of the Solvolysis of $[Co(3Rpy)_4Cl_2]^+$ (R = Me or Et) in Water + Propan-2-ol Mixtures
G.M. El-Subruiti, C.F. Wells, and I.M. Sidahmed **161**

A Shock Tube Study of the Reactions of NH with NO, O_2, and O
J.D. Mertens, A.Y. Chang, R.K. Hanson, and C.T. Bowman **173**

No. 3, March 1991

Hydrolysis of 3,4-Diphenyl-1,2,5-Thiadiazole-1,1-Dioxide. Acid and Base Catalysis
M.V. Mirifico, E.J. Vasini, and J.E. Sicre **197**

Kinetics and Mechanism of Oxidation of Hydrazinium Ion with Peroxomonophosphoric Acid in Acid Perchlorate Solutions and Role of Trace Iodide Ions
T.P.A. Dhas, D.K. Mishra, R.K. Mittal, and Y.K. Gupta **203**

Rate of the Retro-Diels-Alder Dissociation of 1,2,3,6-Tetrahydropyridine Over a Wide Temperature Range
S.S. Sidhu, J.H. Kiefer, A. Lifshitz, C. Tamburu, J.A. Walker, and W. Tsang **215**

Electron Transfer. 102. Some Oxidations by Bromite (BrO_2^-)
A.K. Jhanji and E.S. Gould **229**

Kinetics of the Reactions of the IO Radical with Dimethyl Sulfide, Methanethiol, Ethylene, and Propylene
F. Maguin, A. Mellouki, G. Laverdet, G. Poulet, and G. Le Bras **237**

The Mechanism of Thermal Eliminations, Part XXVIII [1]: Thermal Decomposition of Benzoylformic Acid
R. Taylor **247**

A Combined Stability-Sensitivity Analysis of Weak and Strong Reactions of Hydrogen/Oxygen Mixtures
R.A. Yetter, H. Rabitz, and R.M. Hedges **251**

No. 4, April 1991

Pd(II) Complexes of Amino Alcohols and Their Reaction with Chloramine-*T*: A Kinetic Study
A. Shukla, S. Gupta, and S.K. Upadhyay **279**

Kinetic Modeling of the Reduction of Nitric Oxide in Combustion Products by Isocyanic Acid
J.A. Miller and C.T. Bowman **289**

Kinetics and Mechanisms of Chlorine Transfer from Chloramine to Amines in Aqueous Medium
M. Ferriol, J. Gazet, and M.T. Saugier-Cohen Adad **315**

Isotopic Study of the Mechanism of Ozone Formation
N.W. Larsen, T. Pedersen, and J. Sehested **331**

Oxidation of Amino Acids by Peroxomonophosphoric Acid—A Kinetic Study
G.P. Panigrahi and R.C. Paichha **345**

No. 5, May 1991

The Gas Phase Reaction of CF_3 Radicals with C_6F_5H in the Temperature Range 373–658 K
S.I. Lane, E.V. Oexler, and E.H. Staricco **361**

Experimental Study on the Reactions of Vibrationally Excited 1,1-Difluorocyclopropane
H. Lauterwald and H. Heydtmann **369**

Kinetics and Mechanisms of Oxidation by Metal Ions, Part XII [1] Oxidation of Formaldehyde by Alkaline Osmium(VIII)
M. Vishnoi, K. Sharma, and R.N. Mehrotra **377**

The Decomposition Kinetics of Hydrogen Peroxide Catalyzed by Diethylenetriaminepentaacetatoiron(III) Complex
S.S. Anis and M.A. Mansour **389**

Are Reaction Rate Coefficients Additive? Revised Transition State Theory Calculations for OH + Alkane Reactions
N. Cohen **397**

Travelling Wave in the Chlorite-Thiourea Reaction
R.H. Simoyi, J. Masere, C. Muzimbaranda, M. Manyonda, and S. Dube **419**

Disproportionation Reactions Between Alkyl and Fluoroalkyl Radicals. VI. Difluoromethyl and *n*-propyl Radicals
G.O. Pritchard, S.H. Abbas, M.L. Piasecki, and M.A. Meleason **431**

Kinetics of Ethane Oxidation
P. Dagaut, M. Cathonnet, and J.-C. Boettner **437**

No. 6, June 1991

The Flash Photolysis of Di-μ-Oxo-Bis(Oxo-Molybdate(V)) Acid Aqueous Solutions in the Presence of Excess Thiocyanate
D.O. Martire, M.C. González, M.R. Feliz, L. Cafferata, and A.L. Capparelli **457**

Kinetics and Mechanism of Silver(I) Catalyzed Oxidation of *Tris*(1,10-phenanthroline)Iron(II) with Peroxodiphosphate in Acetate Buffers
P. Parasher, J. Hussain, and P.D. Sharma **473**

Atmospheric Oxidation of Reduced Sulfur Species
G. S. Tyndall and A. R. Ravishankara 483

Rate Constants for the Reaction of Atomic and Molecular Bromine with Gallium Arsenide
I. M. Salusbury and E. A. Ogryzlo 529

Temperature Dependence of the Rate Constants for Reactions of the Carbonate Radical with Organic and Inorganic Reductants
R. E. Huie, L. C. T. Shoute, and P. Neta 541

Communication

Preliminary Observations on the High Temperature Oxidation of Ethyl *Tert*-Butyl Ether
M. P. Dunphy and J. M. Simmie 553

Erratum
N. Cohen

No. 7, July 1991

Salt Effects in the Aqueous Alkaline Hydrolysis of *N*-Hydroxyphthalimide. Kinetic Evidence for the Ion-Pair Formation
M. N. Khan 561

Catalytic Effect of Anionic Micelles on Alkaline Hydrolysis of *N*-Hydroxyphthalimide. Evidence for the Probable Occurrence of the Reaction in Between Gouy-Chapman and Exterior Boundary of Stern Layers of the Micelles
M. N. Khan 567

Kinetic Studies of the Reactions of IO, BrO, and ClO with Dimethylsulfide
I. Barnes, V. Bastian, K. H. Becker, and R. D. Overath 579

Kinetics and Mechanisms of the Oxidation by Permanganate of L-Phenylalanine
M. J. Insausti, F. Mata-Perez, and M. P. Alvarez-Macho 593

Reactions of Primary and Secondary Butoxy Radicals in Oxygen at Atmospheric Pressure
A. Heiss, J. Tardieu de Maleissye, V. Viossat, K. A. Sahetchian, and I. G. Pitt 607

Activation Energy Barriers in the Molecular Relaxation Dynamics of Li^+ Interacting with Acyclic and Cyclic Polyethers in Acetonitrile
M. Xu, E. M. Eyring, and S. Petrucci 623

Minor Processes in the Photolysis of Azomethane at Low Pressure: An Upper Limit for the Rate of the Unimolecular Elimination of H_2 from Vibrationally Excited Ethane
J. M. Roscoe, C. Blatt, and R. A. Back 633

Hydrolysis of Schiff Bases, 1: Kinetics and Mechanism of Spontaneous, Acid, and Base Hydrolysis of *N*-(2/4-hydroxybenzylidene)-2-aminobenzothiazoles
P. Misra, B. K. Mishra, and G. B. Behera 639

No. 8, August 1991

A Shock Tube Study of H + HNCO → NH_2 + CO
J. D. Mertens, K. Kohse-Höinghaus, R. K. Hanson, and C. T. Bowman **655**

Kinetics of the Oxidation of Phosphinic, Phenylphosphinic, and Phosphorous Acids by *N*-Bromoacetamide
A. Moondra, A. Mathur, and K. K. Banerji **669**

The Use of Transition-State Theory to Extrapolate Rate Coefficients for Reactions of H Atoms with Alkanes
N. Cohen **683**

An Investigation of Temperature and Pressure Dependence of the Reaction of CF_2ClO_2 Radicals with Nitrogen Dioxide by Flash Photolysis and Time Resolved Mass Spectrometry
F. Wu and R. W. Carr **701**

A Kinetic Study of the Permanganate Oxidation of Triethylamine. Catalysis by Soluble Colloids
J. F. Perez-Benito and C. Arias **717**

Shock Tube Pyrolysis of Pyrrole and Kinetic Modeling
J. C. Mackie, M. B. Colket III, P. F. Nelson, and M. Esler **733**

No. 9, September 1991

Reactivity of *tert*-Butoxyl Radicals Towards Substituted Indole Derivatives
M. V. Encinas, E. A. Lissi, C. Majmud, and A. F. Olea **761**

THERM: Thermodynamic Property Estimation for Gas Phase Radicals and Molecules
E. R. Ritter and J. W. Bozzelli **767**

The Kinetics and Mechanisms of Methyl 2-Bromopropionate and 2-Bromopropionic Acid Pyrolyses Under Maximum Inhibition
G. Chuchani, R. M. Dominguez, and A. Rotinov **779**

UV Absorption Spectra and Kinetics of the Self Reaction of $CFCl_2CH_2O_2$ and $CF_2ClCH_2O_2$ Radicals in the Gas Phase at 298 K
T. J. Wallington and O. J. Nielsen **785**

Kinetics and Mechanism of Base-Catalyzed Hydrolysis of Cu(II)-Malonamide Complex
M. A. Niaz and A. A. Khan **799**

Electron Transfer. 109. The Reaction of Dimeric Molybdenum(V) with Carboxylato-Bound Chromium(V). A Third Mechanistic Variation
M. C. Ghosh and E. S. Gould **807**

Studies of Unusual Oxidation States of Transition Metals III-Kinetics and Mechanism of Oxidation of Triethanolamine by Diperiodatoargenate(III) Ion in Aqueous Alkaline Medium
T.-S. Shi, J.-T. He, T.-H. Ding, and A.-Z. Wang **815**

An Extended Mechanism for Chemical Activation Systems
M. Olzmann, J. Gebhardt, and K. Scherzer **825**

Kinetics and Mechanism of Intramolecular General Base-Catalyzed Alkanolysis of Phenyl Salicylate in the Presence of Anionic Micelles
M. N. Khan **837**

No. 10, October 1991

Kinetics of Ring-Opening Radical Polymerization of Vinyloxiranes
O. Ito, T. Ishizuka, M. Iino, M. Matsuda, T. Endo, and T. Yokozawa **853**

Gas-Phase Oxidation of 1,4-Dioxane
F. Battin, G. Scacchi, and F. Baronnet **861**

Oscillatory Kinetics and Mechanism of the Chromate Catalyzed Decomposition of Hydrogen Peroxide
M. T. Beck, I. P. Nagy, and G. Székely **881**

Kinetics of the Gas-Phase Reactions of β-Phellandrene with OH and NO_3 Radicals and O_3 at 297 ± 2 K
B. Shorees, R. Atkinson, and J. Arey **897**

The Photooxidation of Methyl *Tertiary* Butyl Ether
D. F. Smith, T. E. Kleindienst, E. E. Hudgens, C. D. McIver, and J. J. Bufalini **907**

The Reaction of 2,5-Dimethylpyrrole with $O_2(\alpha^1\Delta_g)$ in the Gas Phase
E. Fiedler and W. Hack **925**

Rate Constants for Reactions of Perfluorobutylperoxyl Radical with Alkenes
G. S. Nahor and P. Neta **941**

Thermal Unimolecular Decomposition of 1,3,5-Trioxane: Comparison of Theory and Experiment
H. K. Aldridge, X. Liu, M. C. Lin, and C. F. Melius **947**

No. 11, November 1991

Kinetic Model of Liquid B_2O_3 Gasification in a Hydrocarbon Combustion Environment: I. Heterogeneous Surface Reactions
R. C. Brown, C. E. Kolb, H. Rabitz, S. Y. Cho, R. A. Yetter, and F. L. Dryer **957**

Decomposition of Hydrogen Peroxide in Aqueous Solutions at Elevated Temperatures
C. C. Lin, F. R. Smith, N. Ichikawa, T. Baba, and M. Itow **971**

Micellar Catalysis in the Oxidation of Acetophenones by Ce(IV)
G. P. Panigrahi and B. P. Sahu **989**

Products of the Gas-Phase Reaction of Methyl *tert*-Butyl Ether with the OH Radical in the Presence of NO_x
E.C. Tuazon, W.P.L. Carter, S.M. Aschmann, and R. Atkinson **1003**

A Shock Tube Study of the Reaction of Methyl Radicals with Hydroxyl Radicals
J.F. Bott and N. Cohen **1017**

Shock Tube Measurements of the Reactions of CN with O and O_2
D.F. Davidson, A.J. Dean, M.D. DiRosa, and R.K. Hanson **1035**

No. 12, December 1991

Oxidative Pyrolysis of CH_2Cl_2, $CHCl_3$, and CCl_4-I: Incineration Implications
P.H. Taylor, B. Dellinger, and D.A. Tirey **1051**

A Shock Tube Study of the Reactions of the Hydroxyl Radical with Several Combustion Species
J.F. Bott and N. Cohen **1075**

Rate Constants for the Gas-Phase Reactions of OH Radicals and Cl Atoms with *n*-Alkyl Nitrites at Atmospheric Pressure and 298 K
O.J. Nielsen, H.W. Sidebottom, M. Donlon, and Jack Treacy **1095**

Surface Chemkin: A General Formalism and Software for Analyzing Heterogeneous Chemical Kinetics at a Gas-Surface Interface
M.E. Coltrin, R.J. Kee, and F.M. Rupley **1111**

The Thermal Reaction of HNCO at Moderate Temperatures
Y. He, X. Liu, M.C. Lin, and C.F. Melius **1129**

Subject Index **1153**

Compound Index **1155**

Volume Contents **1157**

Author Index **1165**